

Serial No. 09/886,854
Inventor Minervini
Filed June 21, 2001

Page 2

for providing a shield against an electromagnetic interference, the inner lining comprising the conductive layer and the at least one layer of a conductive material; and
a transducer unit mounted within the housing.

2. (Once Amended) The mems transducer of Claim 1 further comprising a spacer member between the printed circuit board and the cover, the spacer member cooperating with the printed circuit board and the cover to form the housing, the spacer member comprising a sidewall at least partially covered by a conductive material, the conductive material providing a portion of the inner lining.

3. (Once Amended) The mems transducer of Claim 2 further comprising a first layer of conductive adhesive for joining the spacer member to the cover.

4. (Once Amended) The mems transducer of Claim 3 further comprising a second layer of conductive adhesive for joining the spacer member to the circuit board.

5. (Once Amended) The mems transducer of Claim 1 further comprising an environmental barrier located within the aperture.

6. (Once Amended) The mems transducer of Claim 5 wherein the aperture is within the cover, the cover comprising a nonconductive layer for providing the environmental barrier.

7. (Once Amended) The mems transducer of Claim 5 wherein the aperture is located within the cover, the cover comprising a polymeric layer for providing the environmental barrier.

Serial No. 09/886,854
Inventor Minervini
Filed June 21, 2001

Page 3

8. (Once Amended) The mems transducer of Claim 5 wherein the aperture is located within the printed circuit board, the printed circuit board comprising a polymeric layer for providing the environmental barrier.

9. (Once Amended) The mems transducer of Claim 5 wherein the environmental barrier comprises a polymeric material.

10. (Once Amended) The mems transducer of Claim 9 wherein the polymeric material is a film.

al
cent 11. (Once Amended) The mems transducer of Claim 10 wherein the film comprises a polytetrafluoroethylene.

12. (Once Amended) The mems transducer of Claim 1 wherein the conductive material comprises copper.

13. (Once Amended) The mems transducer of Claim 1 wherein the printed circuit board comprises a plurality of layers of a conductive material and a plurality of layers of an insulating material.

14. (Once Amended) The mems transducer of Claim 13 wherein one of the plurality of layers of a conductive material comprises a pair of lead pads for electrical connection to the transducer unit.

15. (Once Amended) The mems transducer of Claim 14 wherein one of the plurality of layers of a conductive material provides a first electrical ground plane.

16. (Once Amended) The mems transducer of Claim 15 wherein one of the plurality of layers of a conductive material provides a second electrical ground plane.

17. (Once Amended) The mems transducer of Claim 16 wherein the first and second ground planes are electrically connected to the pair of lead pads.

18. (Once Amended) The mems transducer of Claim 17 wherein one of the plurality of layers of a conductive material comprises a pair of connectors for electrical connection to an external transducer.

a!
cont
19. (Once Amended) A mems transducer comprising:
a transducer unit; and

a housing substantially covering the transducer unit and providing protection against an electromagnetic interference, the housing comprising a first layer of a non-conductive material and a second layer of a conductive material substantially covering the first layer, the second layer substantially forming an inner lining of the housing, the housing further comprising an aperture for receiving a signal into the housing.

20. (Once Amended) The mems transducer of Claim 19 further comprising a third layer of a non-conductive material, the third layer substantially covering the aperture for providing an environmental barrier.

21. (Once Amended) The mems transducer of Claim 20 wherein the third layer comprises a polymeric material.

22. (Once Amended) The mems transducer of Claim 21 wherein the polymeric material is a polytetrafluoroethylene.

23. (Once Amended) The mems transducer of Claim 19 further comprising a retaining ring, the transducer unit engaging the retaining ring.

*a!
cont*

24. (Once Amended) A silicon mems transducer comprising:
a transducer unit;
a substrate including an upper surface having a recess formed therein, the transducer unit attached to the upper surface of the substrate overlapping at least a portion of the recess wherein a back volume of the transducer unit is formed between the transducer unit and the substrate; and
a cover placed over the transducer unit, the cover including an aperture.

25. (Once Amended) A silicon mems transducer comprising:
a transducer unit;
a substrate including an upper surface for supporting the transducer unit;
a cover placed over a portion of the substrate, the cover comprising an aperture and an inner surface, a portion of the inner surface comprising a metallic material for shielding the transducer unit from an interference signal.

26. (Once Amended) A mems transducer comprising:
a transducer unit;
a substrate including an upper surface for supporting the transducer unit;

a cover sealed over a portion of the substrate, the cover having an aperture for receiving a signal and an inner surface comprising a shielding material for protecting the transducer from an interference signal.

27. (Once Amended) A mems transducer comprising:

a transducer unit;

a substrate comprising a layer of an insulating material and a layer of conductive material, the substrate further comprising a surface for supporting the transducer unit;

a cover placed over a portion of the substrate; the cover comprising a shielding material for protecting the transducer from an interference signal.

28. (Once Amended) A mems transducer comprising:

a printed circuit board comprising a first insulating layer and a first conductive layer;

a transducer unit supported by the printed circuit board; and

a cover over a portion of the printed circuit board and forming a housing therewith for protecting the transducer unit, the cover comprising an aperture, a second insulating layer, and a second conductive layer, a portion of the second conductive layer exposed to a conductive spacer and electrically connected to a ground via the conductive spacer for shielding the transducer from an interference signal.

29. (Once Amended) A mems transducer comprising:

a printed circuit board comprising a first insulating layer, a first conductive layer, and an aperture;

a transducer unit; and

a cover over a portion of the printed circuit board and forming a housing therewith for protecting the transducer unit, the cover comprising a second insulating layer and a second conductive layer, a portion of the second conductive exposed to a conductive spacer and electrically connected to a ground via the conductive spacer for shielding the transducer from an interference signal.

30. (Once Amended) A mems transducer housing for a silicon mems transducer, the mems transducer housing comprising:

a!
cont
an inner lining for providing a shield from an electromagnetic interference, the inner lining comprising an aperture adapted for receiving an acoustic signal;

a printed circuit board comprising a first insulating layer and a first conductive layer, the first conductive layer forming at least a portion of the inner lining; and

a cover comprising a second conductive layer forming at least a portion of the inner lining.

31. (Once Amended) A method of producing a mems transducer, the method including the steps of:

providing a housing comprising a first layer of a non-conductive material, an inner lining comprising a conductive material substantially covering the non-conductive material, and an aperture for receiving an acoustic signal;

providing a transducer unit; and

mounting the transducer within the housing wherein the inner lining provides an electromagnetic interference protection to the transducer unit.

Please add the following claims:

Serial No. 09/886,854
Inventor Minervini
Filed June 21, 2001

Page 8

39. (Added Claim) The mems transducer of Claim 3 wherein the conductive adhesive may or may not form a continuous gasket between the spacer member and the cover.

av2
cont
40. (Added Claim) The mems transducer of Claim 4 wherein the conductive adhesive may or may not form a continuous gasket between the spacer member and the circuit board.

Support for the above amendments can be found in the pending application, particularly under the heading "Detailed Description of the Preferred Embodiments." Accordingly, no new matter has been added to the present application.

You are hereby authorized to debit our Deposit Account No.23-0280 for any payment deficiencies with regard to the above communication

Respectfully submitted,

Date: February 1, 2002

By *Peter M. Klobuchar*
Peter M. Klobuchar, Reg. No. 43,722
WALLENSTEIN & WAGNER, LTD.
311 South Wacker Dr., 53rd Floor
Chicago, IL 60606
(312)554-3300

I HEREBY CERTIFY THAT THIS DOCUMENT IS BEING DEPOSITED WITH THE U.S. POSTAL SERVICE AS EXPRESS MAIL IN AN ENVELOPE ADDRESSED TO: BOX FEE AMENDMENT, COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231, ON FEBRUARY 1, 2002, UNDER EXPRESS MAIL NO. EL 831512372 US.

Gerianne M. Flannery
Gerianne M. Flannery